SYSTEM 81 PLUS 48 (X, Y) SINGLE AND DUAL MODEL WASHERS

OPERATOR'S/MAINTENANCE MANUAL

CUSTOM ULTRASONICS, INC.

144 RAILROAD DRIVE
IVYLAND, PA 18974
215-364-1477

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INTRODUCTION:

The field of general surgery has expanded to include every medical discipline. As a result of the development of new diagnostic and treatment techniques, the surgical device has become technically sophisticated, and intricate in design. To provide a reusable surgical device that is safe for reuse, the technical requirements of the device must be understood.

While having a clear understanding of the technical requirements of a reusable device is essential, it is equally important to understand that it is the synergism of all components of a decontamination process that will result in a device that is "safe for patient use." The water quality and temperature, the type and amount of detergent, the manual pre-processing procedures, the mechanical techniques utilized, the time employed, the liquid chemical chosen, and the drying and storage procedures will all impact the outcome.

Each facility should establish acceptable standardized procedures for decontamination and sterilization of the instruments and its accessories after patient use, and/or prior to reuse.

This manual includes instruction for the ***System 81 Plus*** 48 (X,Y) Single and Dual Models.

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WATER QUALITY AND TEMPERATURE:

Across the nation, water quality varies and can affect the mechanical components of your ***System 81 Plus***, and/or the outcome of the standardized process. The mineral and sediment content in a facility's water supply may leave deposits on the instrument(s) and/or the mechanical components of the system, and may interfere with the action of some detergents.

All potable tap water contains resident microbial contaminants that should be assessed to determine its acceptability for processing medical devices.

Custom Ultrasonics, Inc. suggests installation of a **25** micron and 5 micron filters assembly for the water lines supplying the system to remove gross sediment. Contact ***Custom Ultrasonics, Inc.*** for information on water filter systems.

Water temperature is also critical to the process outcome, and should be set to the temperature parameters of the enzymatic detergent or detergent. In combination with a detergent and/or enzymatic detergent formulated to dissolve organic contaminants at this temperature, the warm water will potentiate the removal of contaminants during the cleaning phase of the standardized decontamination process. The warm water facilitates cleaning, and it is the best vehicle for complete removal of contaminants, residual detergent, and chemical solutions during the rinsing phase of the process.

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DETERGENTS ENZYMATIC DETERGENTS:

"Enzymatic detergents are complex chemicals when dissolved in water in the proper concentration will breakdown and dissolve grease, oil and foreign matter or will break up and suspend these materials in the solution so that they can be removed in the cleaning process."

Available are a variety of detergents for cleaning medical devices. An appropriate detergent is dependent defective and compatible with the standardized cleaning phase for the ***System 81 Plus.*** It should be low foaming and free rinsing.

Detergents other than Tergal 800 may be used in the ***System 81 Plus*** provided they are: (a) specifically formulated for ultrasonic cleaning, (b) compatible with the components of the endoscope and the ***System 81 Plus*** and (c) for which validated simulated in-use data (e.g., microbiological or equivalent) demonstrate the detergent's effectiveness when used to clean endoscopes during *worst-case* testing conditions.

All tests performed to assess washing effectiveness were performed using Tergal 800, an ultrasonic compatible (alkaline) detergent. This data can be reviewed at www.myendosite.com/booklet_1.pdf. ***Custom Ultrasonics, Inc.*** has received a few reports that suggest some brands of detergent (e.g., Klen-zyme, Instru-Klenz) may not satisfy all three of these criteria and therefore, may not be appropriate for use in the ***System 81 Plus.*** Contact ***Custom Ultrasonics, Inc.*** before using brand of detergent other than Tergal 800. Use of an un-tested detergent is not recommended and may result in ineffective reprocessing or damage to the endoscope and/or ***System 81 Plus***.

Two common characteristics of enzymatic detergent formulations are a required temperature and a specific time within which the formula can be expected to achieve the desired outcome. Contact ***Custom Ultrasonics, Inc.*** for detergent information.

An enzymatic detergent formula is used during pre-soak phase when the device(s) will be soaked for a period of time prior to automatic reprocessing. An enzymatic detergent is particularly useful, when used within the right combination of time and water temperature specifications, to assist in the breakdown of dried organic contaminants, or when there is an extended delay in the processing of contaminated surgical instruments, and in the reprocessing of related.

Enzymatic formulations designed to dissolve protein contaminants during soaking have a specified dilution rate, immersion time and temperature requirements. The manufacturer's labeling should be reviewed to determine the specifications for effectiveness and compatibility within the ***System 81 Plus***.

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MECHANICAL ACTION DURING THE SYSTEM 81 PLUS CLEANING PHASE:

Mechanical action, in combination with a detergent, is important during almost any cleaning process. ***System 81 Plus*** employs both mechanical purge pump and ultrasound waves (high intensity sound waves) to potentiate the activity of the detergent and the water during the cleaning phase of the standardized process, and to assure removal of residues during the rinsing phases.

The ***high intensity*** **sound waves** of the ***System 81 Plus*** were chosen to meet the technical requirements of the surgical instruments and because it enhanced thorough cleaning and rinsing. As the *high intensity* sound waves are delivered during the cleaning and rinsing solutions, molecules are set in very rapid motion and small bubbles develop. When these bubbles reach a critical mass, they implode, creating a vacuum that draws from adjacent cracks and crevices any small bits of foreign matter, including those hidden or inaccessible.

TIME SPECIFICATION FOR THE STANDARDIZED PROCESS:

Each phase of the standardized has been precisely timed to achieve optimal results based on the correct combination of water temperature and detergent and/or enzymatic detergent. The total cycle time of the standardized process depends on the length of immersion time of the chemical, per the liquid sterilants label requirements. Contact ***Custom Ultrasonics, Inc.*** for information on our cleaning and germicide data.

THE STANDARDIZED PROCESS OF SYSTEM 81 PLUS:

The standardized process of ***System 81 Plus*** series of instrument preprocessors is model dependent. All models have a standardized Wash phase incorporating ultrasonics and an oscillating purge pump. Certain others have, either individually or in combination, the following options: A pre-wash rinse, an enzymatic pre-soak, a disinfectant/sterilization cycle, and/or a rinse cycle with automatic injection or an instrument lubricant.

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PHYSICAL DESCRIPTION OF THE SYSTEM 81 PLUS

The ***System 81 Plus*** is a free standing reprocessing unit that connects to a 120VAC 20A 60Hz 1Ph electrical wall receptacle(s) hot and cold water lines with in line sediment filter(s) and waste (stand pipe) drain line(s). It is mounted on heavy duty casters for mobility, and for easy access to the internal mechanical and electronic components during routine maintenance procedures.

The cabinet is fabricated from carbon steel and painted. The counter top is Corian™ that resists the corrosive properties of detergents and chemicals.

Removal of the cabinet's front and back access panels reveal the plumbing lines, mechanical components, and the electronic assemblies. These panels should only be removed by a qualified technician.

The front door contains the operational switches for the air pump and the hand spray.

The computer contains the hardware for implementing the software. Included is a keyboard, printer, and a high resolution color monitor that displays the components and phases performed by the software program.

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INSTALLATION OF IN-SERVICE OF THE SYSTEM 81 PLUS

ELECTRICAL REQUIREMENTS:

The ***System 81 Plus*** requires a DEDICATED 120 Volt, 20 amp 60 Hz 1Ph receptacle. GFCI receptacles are not recommended since the system contains an electrostatic isolation transformer.

The number of DEDICATED electrical lines required is model dependent.

MECHANICAL REQUIREMENTS:

The physical space requirements are model dependent. The appropriate "rough-in" requirements are provided with the Quotation for Purchase.

Standard potable water, hot and cold, with ½" or ¾" copper lines, ¾" male garden hose adapters, and shut off valves are required; the number of water lines is model dependent. The required water pressure is between 30 to 50 psi. Pressure reducer valves must be installed, if water pressure is above 50 psi.

A 25 and 5 micron water filters with 20" cartridges must be installed in a way such that the water lines do not interfere with the required water pressure of 30 to 50 psi.

Water Temperature is required to be approximately 110 degrees F. The water temperature will vary based on the types of detergent and enzymatic detergent used.

A standpipe drain two inches (2") in diameter and eighteen inches (18") from the floor is recommended for each system.

COMPUTER HARDWARE:

An IBM Compatible CPU, Keyboard, High Resolution Color Monitor, and a Printer are supplied as part of the ***System 81 Plus.***

The Keyboard has a protective cover that can be easily cleaned.

PARTS SUPPLIED WITH SYSTEM 81 PLUS:

The ***System 81 Plus*** is equipped with a standard hospital grade, grounded, power cord that is connected to the ***System 81 Plus's*** circuit breaker.

The computer is equipped with surge protection.

The ***System 81 Plus*** is equipped with standard ¾" internal diameter copper water lines and ¾" fill and 1" drain hoses.

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A hand spray is provided with the ***System 81 Plus*** to assist in the thorough cleaning of the processing chamber(s) utilized in good housekeeping methods.

The Operator's/Maintenance Manual for your ***System 81 Plus*** describes the system operation, steps for problem solving, and the routine maintenance procedure.

INSTALLATION AND IN-SERVICE PROGRAM:

All Systems are In-serviced by a ***Custom Ultrasonics, Inc.*** technician at no extra cost. The technician, during installation will assure that all ***System 81 Plus*** functions are operational.

Based on your list of surgical instruments received prior to installation, all required channel adapters will be provided for device attachment to the system at the time of the in-service.

The In-service Program is dedicated to the Operator, Maintenance, and/or Biomedical Personnel and is one day and a half in length.

During the In-service Program, all system operations, instrument adaptation and routine maintenance procedure will be demonstrated, as well as system diagnostics.

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PRE-PROCESSING GUIDELINES

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RECOMMENDED PRE-PROCESSING GUIDELINES:

Manual "pre-processing" of your surgical instrument(s) must be completed prior to their placement into the processing chamber of your ***System 81 Plus.*** The following steps have been designed to guide you in the preparation of the surgical instruments(s) for automated reprocessing, and specifically, to remove large gross organic contaminants.

1. Immediately after the surgical procedure, manually flush a water and detergent solution through the lumen channels to remove gross debris. Soak instruments in a solution of mild detergent and/or enzymatic detergent and water, as recommended by their manufacturer.

2. Wipe down the instrument tube's exterior to remove gross contaminants.

3. Disassemble instruments with removable parts, making sure to properly store small pieces in the basket.

4. Pass an appropriately-sized cleaning brush through the channel port(s), clean the brush, and retract the brush. Continue brushing until there is no debris visible on the brush.

5. All delicate and lumen instruments are to be placed on top; all other surgical instruments should be placed on the bottom of the ***Custom Ultrasonics, Inc.*** specially designed basket for use with the ***System 81 Plus***. Select and attach the appropriate instrument adapters to the instruments for processing in your ***System 81 Plus.***

6. Connect the adapter(s) to the manifold, in consecutive order starting from the opposite end of the manifolds bulkhead connector. Any manifold ports that are not being used should have plastic caps placed on them.

7. Make certain the basket's two liquid feed adapters are attached to the basket's manifold and the machine's bulkhead connectors.

8. On start-up check that all adapters are secured and liquid is flowing through all the lumens of each instrument.

Custom Ultrasonics, Inc. offers an ideal Pre-processing sink specifically designed to achieve standard Pre-processing guidelines and accommodate even the largest surgical instruments. To assist in the pre-processing, a manifold which flushes as many as (8) surgical instrument channels simultaneously with detergent and rinse water.

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STANDARD OPERATION

SYSTEM 81 PLUS 48 X
SYSTEM 81 PLUS 48 Y
SINGLE AND DUAL MODELS

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OPERATION OF THE SYSTEM 81 PLUS 48-X

1. Entire system is turned "ON" by opening the front door of ***System 81 Plus*** and engaging the **Computer ON/OFF switch** in lower right hand corner.

2. Allow the computer to perform its BOOT UP procedure.

3. A gray MENU BAR will appear across the top of the screen as shown below.

RUN CU MASTER DATA REPORTS MISC DAY/MO/TIME/YEAR

NOTE: *Examine the time and date in the upper right hand corner of the Gray Master Menu screen. If the time or date is incorrect hold down the ALT key and simultaneously press the X key on the keyboard. This will take you out of the program and to A: prompt. Type in either the word date or time, and follow the screen instructions. Once the date and/or time have been corrected, you can simply type the letters CU at the A: prompt, followed by pressing the Enter key. The screen will return to the Gray Master Menu bar.*

4. To enter the program, hold down the ALT button and press the letter U.

5. **(A)** A list of Pre-Processing Guidelines will appear. These guidelines are to aid in the preparation of the instrument(s) prior to placement in the automated ***System 81 Plus***. Read through them and Press ENTER.

   (B) If the screen is divided into two (2) or more sections, **highlight the desired bay # using the left and right arrow keys** to scroll around the screen. Press **ENTER**. A list of Pre-Processing guidelines will appear. These guidelines are to aid in the preparation of the instrument(s) prior to placement in the automated ***System 81 Plus***. Read through them and Press **ENTER.**

6. The standard screen will appear; at the bottom of the screen a Blue Menu Bar will display a selection of options that use the "F#" keys: F1-Patient Date, F2-System Data, F4- Soak/Wash, F6-Wash, F7-Wash/Lub, F8-Soak/Wash/Lub, F9-Empty.

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STANDARD PROGRAM SCREEN

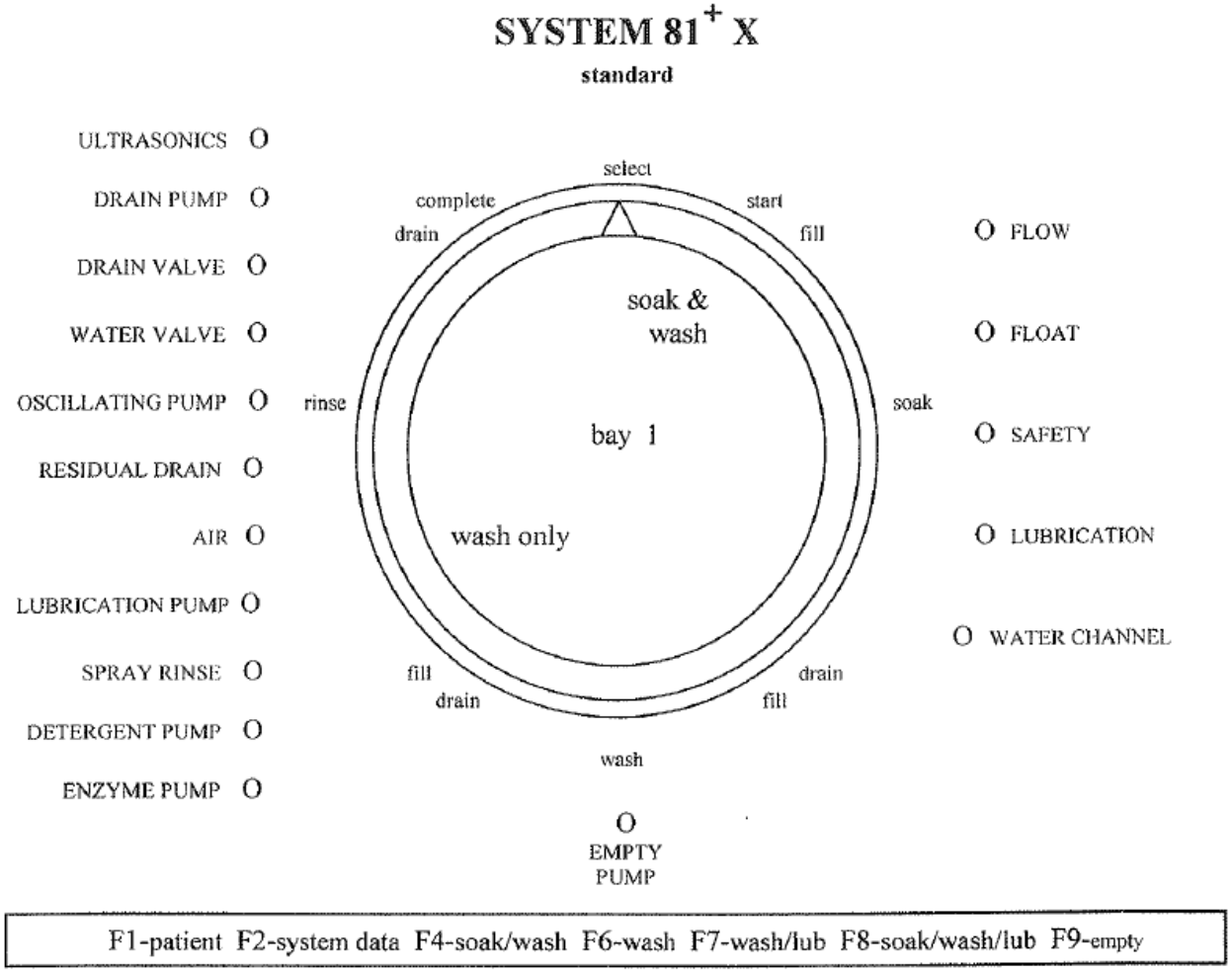

Figure 1

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PROGRAM MENU FOR THE SYSTEM 81 PLUS 48(X) KEYS (F1) TO (F10)

The standardized process of the ***System 81 Plus*** is controlled by a software program; and program selection is initiated by pressing FUNCTION KEYS **(F1)** through **(F10)**. The Program Menu is:

(F1)PATIENT DATA:

Prior to or during a processing program, patient data may be entered to document the process.

(F2)SYSTEM DATA:

This screen is used to change the name of the facility and detergent which will be reflected on the print out and/or stored on the hard drive if applicable.

Although the (F1) & (F2) Keys appear on this particular program screen, they will not be used in this program.

(F4) SOAK & WASH:

This program selection will soak, wash, rinse, and air purge your device(s). At the completion of this cycle the instruments are ready to be sterilized.

After reviewing and completing the "PRE-PROCESSING" Instructions:

1. **Press (F4)-Soak/Wash.** This program begins immediately.

2. As water is entering the processing chamber, **enzymatic detergent** is automatically injected as per manufactures dilution rate specifications. (The injection rate is set by a factory trained technician.)

   NOTE: The enzymatic detergent bottle(s) need to be monitored daily to assure that the enzymatic detergent bottle does not run dry. Change the bottle(s) when the enzymatic detergent drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the enzymatic detergent lines.

   If air has entered the enzymatic detergent lines, first reattach a new bottle of enzymatic detergent then start the machine for your next cycle. While the enzymatic detergent pump is trying to fill, use the hand pump on the bottle to prime the lines until all tubing is filled with enzymatic detergent.

3. Confirm the flow of enzymatic detergent through the channel(s). When the red arrow is moving through the soak phase:

   a. Turn on the "AIR" switch for 10 seconds, during the first 60 seconds of the cycle.

   b. Observe the air flow through the channel tubing adapters. The enzymatic detergent will be purged from all adapters if the internal channels are open.

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c. Turn the "AIR" switch off, close the lid and allow the program to continue.

NOTE: *If you feel a surgical instrument has a blocked channel or lumen, remove it from the processing chamber using proper decontamination and handling techniques and either attempt to open the channel or call the surgical instruments manufacturer for further directions.*

4. The enzymatic detergent soak phase will help in the removal of bioburden and gross contaminates. At the completion of the enzymatic detergent soak phase the machine will go through a wash and rinse phase with ultrasonics.

5. As water is entering the processing chamber for the wash phase, **detergent** (Tergal 800) is automatically injected as per manufactures dilution rate specifications. (The injection rate is set by a factory trained technician.)

   NOTE: The detergent bottle(s) need to be monitored daily to assure that the detergent bottle does not run dry. Change the bottle(s) when the detergent level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the detergent lines.

   If air has entered the detergent lines, first reattach a new bottle of detergent then start the machine for your next cycle. While the detergent pump is trying to fill, use the hand pump on the bottle to prime the lines until all tubing is filled with detergent.

6. A fresh water rinse with ultrasonics follows this wash phase.

7. The drain phase after the final rinse will purge the lumen instruments with filtered air.

8. At the completion of the program, remove the instruments for further processing (sterilization) and follow the screen prompt to **(F3)** CONTINUE, CLEAR PATIENT DATA and return to the standard operating screen.

(F6) WASH:

This program selection will wash, rinse and air purge your lumened instrument. At the completion of this cycle the instruments are ready to be sterilized using a terminal sterilization process.

After reviewing and completing the "PRE-PROCESSING" Instructions:

1. **Press (F6) Wash.** This program begins immediately.

2. As water is entering the processing chamber, **detergent** is automatically injected as per manufacturer's dilution rate specifications. (This injection rate is set by a ***Custom Ultrasonic, Inc.*** trained technician.)

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NOTE: The detergent bottle(s) need to be monitored daily to assure that the detergent bottle does not run dry. Change the bottle(s) when the detergent level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the detergent lines.

If air has entered the detergent lines, first reattach a new bottle of detergent then start the machine for your next cycle. While the detergent pump is trying to fill, use the hand pump on the bottle to prime the lines until all tubing is filled with detergent.

3. Confirm the flow of solution through the channel(s). When the ultrasonics initiate with the wash phase:

    a. Turn on the "AIR" switch for 10 seconds, during the first 60 seconds of the cycle.

    b. Observe the air flow through the channel tubing adapters. The detergent will be purged from all adapters if the internal channels are open.

    c. Turn the "AIR" switch off, close the lid, and allow the program to continue.

    NOTE: *If you feel a surgical instrument has a blocked channel, remove it from the processing chamber using proper decontamination technique, and either attempt to open the channel or call the surgical instruments manufacturer for further directions.*

4. Following the wash phase will be a fresh water rinse with ultrasonics.

5. The drain phase after the final rinse will purge of the lumen instruments with forced air.

6. At the completion of the program, remove the instruments for further processing (sterilization) and follow the screen prompt to **(F3)** CONTINUE, CLEAR PATIENT DATA and return to the standard operating screen.

(F7) WASH & LUBRICATE:

This program selection washes, rinses, lubricates and air purges your device(s). At the completion of this cycle, the instruments are ready to be sterilized using a terminal sterilization process.

After reviewing and completing the "PRE-PROCESSING" Instructions:

1. **Press (F6) Wash/Lub.** This program begins immediately. ("Lub" stands for lubrication.)

2. As water is entering the processing chamber, **detergent** is automatically injected as per manufacture's dilution rate specifications. (This injection rate is set by a Custom Ultrasonics, Inc. trained technician.)

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NOTE: The detergent bottle(s) need to be monitored daily to assure that the enzymatic bottle does not run dry. Change the bottle(s) when the detergent level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the enzymatic lines.

If air would enter the detergent lines, first reattach a new bottle of detergent then start the machine for your next cycle. While the detergent pump is trying to fill, use the hand pump on the bottle to prime the lines until all tubing is filled with detergent.

3. Confirm the flow of detergent through the channel(s). When the ultrasonics initiate with the wash phase:

   a. Turn on the "AIR" switch for 10 seconds, during the first 60 seconds of the cycle.

   b. Observe the air flow through the channel tubing adapters, the detergent will be purged from all adapters if the internal channels are open.

   c. Turn the "AIR" switch off, close the lid and allow the program to continue.

NOTE: *If you feel a surgical instrument has a blocked channel, remove the involved surgical instrument from the processing chamber using proper decontamination technique, and either attempt to open the channel or call the surgical instruments manufacturer for further directions.*

4. As water is entering the processing chamber during the **lubricant,** final rinse phase is automatically injected as per manufacturer's dilution rate specifications. (The injection rate is set by a factory trained technician.)

   NOTE: The lubricant bottle(s) need to be monitored daily to assure that the lubricant bottle does not run dry. Change the bottle(s) when the lubricant level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the lubricant lines.

   If air has entered the lubricant lines, first reattach a new bottle of lubricant then start the machine for your next cycle. While the lubricant pump is trying to fill, use the hand pump on the bottle to prime the lines until all tubing is filled with lubricant.

5. Following the lubricant phase will be a fresh water rinse with ultrasonics.

6. The drain phase after the final rinse will contain an air purge of the lumen instruments.

7. At the completion of the program, remove the instruments for further processing (sterilization) and follow the screen prompt to **(F3)** CONTINUE, CLEAR PATIENT DATA and return to the standard operating screen.

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(F8) SOAK/WASH & LUBRICATE:

This program selection soaks, washes, rinses, lubricates and air purge your device(s). At the completion of this cycle the instruments are ready to be sterilized using a terminal sterilization process.

After reviewing and completing the "PRE-PROCESSING" Instructions:

1. **Press (F6) Soak/Wash/Lub.** This program begins immediately.

2. As water is entering the processing chamber, **enzymatic cleaner** is automatically injected as per manufacture's dilution rate specifications. (This injection rate is set by a factory trained technician.)

   NOTE: The detergent bottle(s) need to be monitored daily to assure that the enzymatic bottle does not run dry. Change the bottle(s) when the detergent level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the enzymatic lines.

   If air has entered the enzymatic lines, first reattach a new bottle of enzymatic then start the machine for your next cycle. While the enzymatic pump is trying to fill, use the hand pump on the bottle to prime the lines until all tubing is filled with enzymatic.

3. Confirm the flow of solution through the channel(s). When the soak phase initiates:

   a. Turn on the "AIR" switch for 10 seconds, during the first 60 seconds of the cycle.

   b. Observe the air flow through the channel tubing adapters, the solution will be purged from all adapters if the internal channels are open.

   c. Turn the "AIR" switch off, close the lid and allow the program to continue.

   NOTE: *If you feel a surgical instrument has a blocked channel, remove it from the processing chamber using proper decontamination technique, and either attempt to open the channel or call the surgical instruments manufacturer for further directions.*

4. The enzymatic soak phase will facilitate in the removal of bioburden and gross contaminates. At the completion of the enzymatic soak phase, the ***System 81 Plus*** will activate its wash and rinse phase with ultrasonics.

5. As water is entering the processing chamber during the wash phase, **detergent** is automatically injected as per manufacturer's dilution rate specifications. (The injection rate is set by a factory trained technician.)

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NOTE: The detergent bottle(s) need to be monitored daily to assure that the detergent bottle does not run dry. Change the bottle(s) when the detergent level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the detergent lines.

If air has entered the detergent lines, first reattach a new bottle of detergent then start the machine for your next cycle. While the detergent pump is trying to fill, use the hand pump on the bottle to prime the lines until all tubing is filled with detergent.

6. As water is entering the processing chamber during the lubricant final rinse phase is automatically injected as per manufacturer's dilution rate specifications. (The injection rate is set by a factory trained technician.)

   NOTE: The lubricant bottle(s) need to be monitored daily to assure that the lubricant does not run dry. Change the bottle(s) when the level drops down to within one inch of the bottom. This is to assure no extra air gets into the lubricant lines.

   If air would enter the lubricant line(s), first reattach a new bottle of lubricant then start the machine for your next cycle. While the lubricant pump is trying to fill use the hand pump on the bottle to prime the lines until all tubing is filled with lubricant.

7. Following the lubricant phase will be a fresh water rinse with ultrasonics.

8. The drain phase after the final rinse will purge the lumen instruments with compressed air.

9. At the completion of the program, remove the instruments for further processing (sterilization) and follow the screen prompt to **(F3)** CONTINUE, CLEAR PATIENT DATA and return to the standard operating screen.

(F9) EMPTY:

1. Make certain the two main basket adapter hook ups are connected to the machine's bulkhead fittings and are laying in the chamber.

2. Press **(F9)** to **"EMPTY"** the processing chamber.

3. When cleaning the chamber, engage the rinse switch on the front door panel and remove the rinse hose from its holder. Use a hospital grade, non-abrasive surface cleaner/disinfectant to clean the machine.

4. When the chamber is thoroughly rinsed and emptied, turn the "RINSE" switch "OFF". The rinse light will turn "OFF".

5. Press the handle on the hand spray to relieve the water pressure and return to storage.

6. To end the emptying process, Press **(F1) Stop Maintenance.**

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(F10) MAIN (THIS KEY IS USED ON DUAL CHAMBERED MACHINES ONLY):
Pressing **(F10)** will take you to the MAIN PROGRAM screen. To select a different bay, use the left and right arrow keys and illuminate the desired bay in red. Press Enter. (This selection is only available for double bay systems.)

NOTE: Program selection is determined by the operator. Program choice is initiated by pressing the appropriate function key. The screen prompts will assist you in determining the correct program.

IMPORTANT INFORMATION

Once a program is initiated, it cannot be aborted. The program must run to completion.

If a SYSTEM FAULT occurs, a BEEP will sound, the arrow on the dial will move to COMPLETE, and a screen prompt will ALERT you to an ERROR. Directions will appear on the screen to clear the ERROR; before clearing ERROR make note of the problem to help in trouble shooting when talking with qualified technicians.

CAUTION: If an error occurs, the selected process will not have been completed. The operator must determine the steps to follow to complete the selected process after addressing the system ERROR. For Questions Call ***Custom Ultrasonics, Inc.*** 215-364-1477.

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OPERATION OF THE SYSTEM 81 PLUS 48(Y)

1. Entire system is turned "ON" by opening front door of ***System 81 Plus*** and engaging the **Computer ON/OFF switch** in lower right hand corner.

2. Allow the computer to perform its BOOT UP procedure.

3. A gray MENU BAR will appear across the top of the screen as shown below.

RUN CU MASTER DATA REPORTS MISC DAY/MO/TIME/YEAR

NOTE: *Examine the time and date in the upper right hand corner of the Gray Master Menu screen. If the time or date is incorrect hold down the ALT key and simultaneously press the X key on the keyboard. This will take you out of the program and to A: prompt. Type in either the word date or time, and follow the screen instructions. Once the date and/or time have been corrected you can simply type the letters CU at the A: prompt, followed by pressing the Enter key. The screen will return to the Gray Master Menu bar.*

4. To enter the program, hold down the ALT button and press the letter U.

5. **(A)** A list of Pre-Processing Guidelines will appear with single chambered machines. These guidelines are to aid in the preparation of the instrument(s) prior to placement in the automated ***System 81 Plus***. Read through them and Press ENTER.

   (B) If the screen is divided into two (2) or more sections, **highlight the desired bay # using the left and right arrow keys** to scroll around the screen. Press **ENTER**. A list of Pre-Processing guidelines will appear. These guidelines are to aid in the preparation of the instrument(s) prior to placement in the automated ***System 81 Plus***. Read through them and Press **ENTER.**

6. The standard screen will appear; at the bottom of the screen a Blue Menu Bar will display a selection of options using the "F#" keys. F1-Patient Data, F2-System Data, F4-Prerinse/Wash, F6- Wash, F7-Wash/Lub, F8-Prerinse/Wash/Lub, F9-Empty.

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STANDARD PROGRAM SCREEN

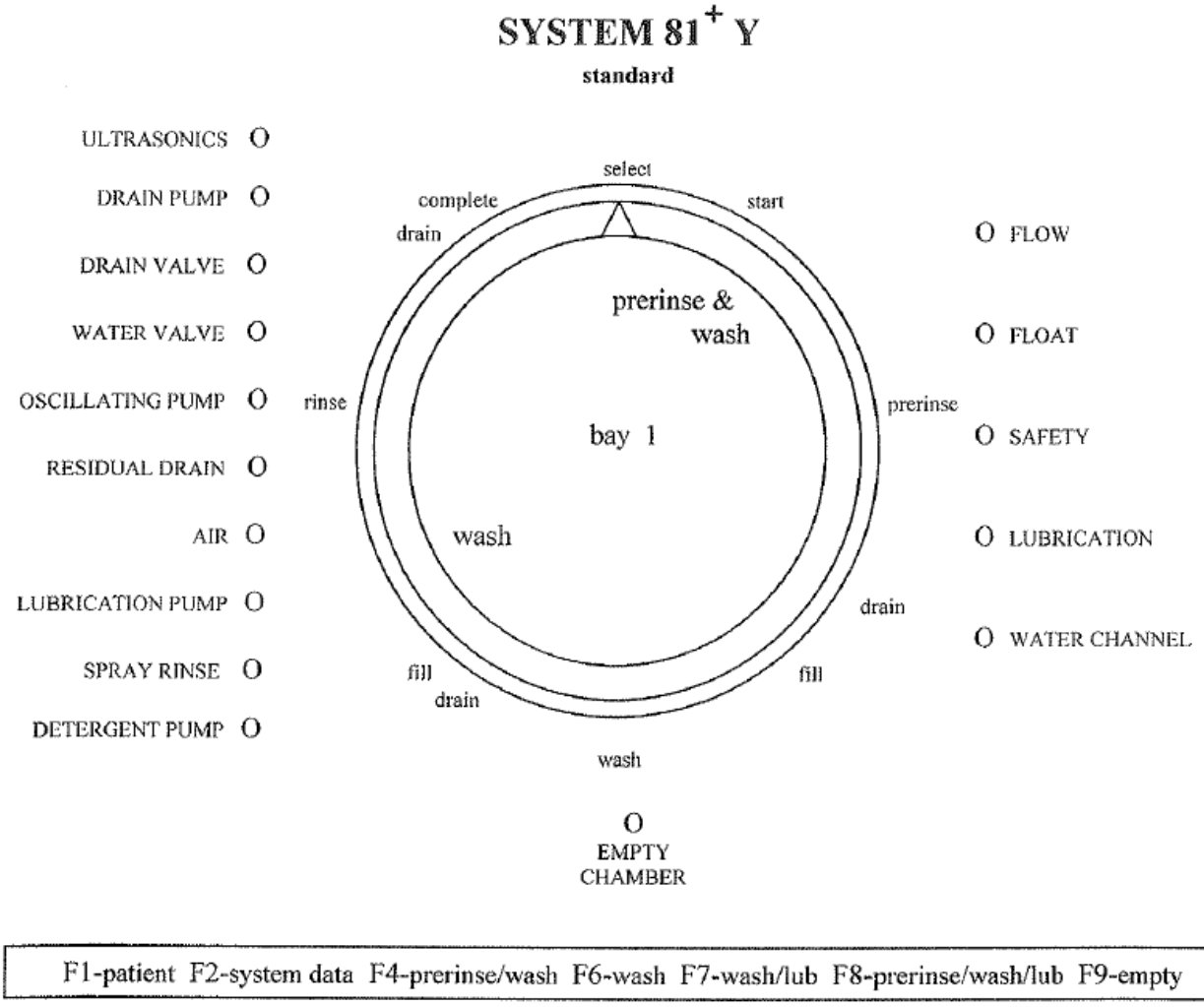

Figure 2

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PROGRAM MENU FOR THE SYSTEM 81 PLUS 48(Y) KEYS (F1) TO (F10)

The standardized process of the ***System 81 Plus*** is controlled by a software program; and program selection is initiated by pressing FUNCTION KEYS, **(F1)** through **(F10)**. The Program Menu is:

(F1) PATIENT DATA:

Prior to or during a processing program, patient data may be entered to document the process.

(F2) SYSTEM DATA:

This screen is used to change the name of the facility and detergent which will be reflected on the print out and/or stored on the hard drive if applicable.

Although the (F1) & (F2) Keys appear on this particular program screen, they will not be used in this program.

(F4) PRE-RINSE & WASH:

This program selection will pre-rinse, wash, rinse, and air purge your device(s). At the completion of this cycle the instruments are ready to be sterilized.

After reviewing and completing the "PRE-PROCESSING" Instructions:

1. Press **(F4) Pre-rinse & Wash.** This program begins immediately.

2. The pre-rinse consists of sprayers that will spray fresh water on the instruments in the basket. Following the pre-rinse will be a wash and rinse phase.

3. As water is entering the processing chamber during the wash phase, **detergent** (Tergal 800) is automatically injected as per manufacturer's dilution rate specifications. (The injection rate is set by a ***Custom Ultrasonics, Inc.*** trained technician.)

   NOTE: The detergent bottle(s) need to be monitored daily to assure that the detergent bottle does not run dry. Change the bottle(s) when the detergent level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the enzymatic lines.

   If air has entered the detergent lines, first reattach a new bottle of detergent then start the machine for your next cycle. While the detergent pump is trying to fill, use the hand pump on the bottle to prime the lines until all tubing is filled with detergent.

4. Confirm the flow of solution through the channel(s). When the ultrasonics initiate with the wash phase:

   a. Turn on the "AIR" switch for 10 seconds, during the first 60 seconds of the cycle.

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b. Observe the air flow through the channel tubing adapters. The detergent will be purged from all adapters if the internal channels are open.

c. Turn the "AIR" switch off, close the lid and allow the program to continue.

NOTE: *If you feel a surgical instrument has a blocked channel or lumen, remove it from the processing chamber using proper decontamination and handling techniques and either attempt to open the channel or call the surgical instruments manufacturer for further directions.*

5. Following the wash phase will be a fresh water rinse with ultrasonics.

6. The drain phase after the final rinse will purge the lumen instruments with filtered air.

7. At the completion of the program, remove the instruments for further processing (sterilization) and follow the screen prompt to **(F3)** CONTINUE, CLEAR PATIENT DATA and return to the standard operating screen.

(F6) WASH:

This program selection will wash, rinse and air purge your lumened instruments. At the completion of this cycle the instruments are ready to be sterilized using a terminal sterilization process.

After reviewing and completing the "PRE-PROCESSING" Instructions:

1. Press **F6 Wash.** This program will begin immediately.

2. As water is entering the processing chamber, **detergent** is automatically injected as per manufacturer's dilution rate specifications. (This injection rate is set by a ***Custom Ultrasonics, Inc***. trained technician.)

   NOTE: The detergent bottle(s) need to be monitored daily to assure that the detergent bottle does not run dry. Change the bottle(s) when the detergent level drops down to within one inch of the bottom. This is to assure no extra air gets into the detergent lines.

   If air would enter the detergent line(s), first reattach a new bottle of detergent then start the machine for your next cycle. While the detergent pump is trying to fill use the hand pump on the bottle to prime the lines until all tubing is filled with detergent.

3. Confirm the flow of solution through the channel(s). When the ultrasonics initiate with the wash phase:

   a. Turn on the "AIR" switch for 10 seconds, during the first 60 seconds of the cycle.

   b. Observe the air flow through the channel tubing adapters. The detergent will be purged from all adapters if the internal channels are open.

   c. Turn the "AIR" switch off, close the lid and allow the program to continue.

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NOTE: *If you feel a surgical instrument has a blocked channel, remove it from the processing chamber using proper decontamination technique, and either attempt to open the channel or call the surgical instruments manufacturer for further directions.*

4. Following the wash phase will be a fresh water rinse with ultrasonics.

5. The drain phase after the final rinse will purge the lumen instruments with forced air.

6. At the completion of the program, remove the instruments for further processing (sterilization) and follow the screen prompt to **(F3)** CONTINUE, CLEAR PATIENT DATA and return to the standard operating screen.

(F7) WASH & LUBRICATE:

This program selection washes, rinses and air purge your device(s). At the completion of this cycle the instruments are ready to be sterilized using a terminal sterilization process.

After reviewing and completing the "PRE-PROCESSING" Instructions:

1. **Press (F6) Wash/Lub.** This program will begin immediately.

2. As water is entering the processing chamber, **detergent** is automatically injected as per the manufacturer's dilution rate specifications. (This injection rate is set by a ***Custom Ultrasonics, Inc.*** trained technician.)

   NOTE: The detergent bottle(s) need to be monitored daily to assure that the detergent bottle does not run dry. Change the bottle(s) when the detergent level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the detergent lines.

   If air would enter the detergent line(s), first reattach a new bottle of detergent then start the machine for your next cycle. While the detergent pump is trying to fill use the hand pump on the bottle to prime the lines until all tubing is filled with detergent.

3. Confirm the flow of detergent through the channel(s). When the ultrasonics initiate with the wash phase:

   a. Turn on the "AIR" switch for 10 seconds, during the first 60 seconds of the cycle.

   b. Observe the air flow through the channel tubing adapters, the solution will be purged from all adapters if the internal channels are open.

   c. Turn the "AIR" switch off, close the lid and allow the program to continue.

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NOTE: *If you feel a surgical instrument has a blocked channel, remove the involved surgical instruments from the processing chamber using proper decontamination technique, and either attempt to open the channel or call the surgical instruments manufacturer for further directions.*

4. As water is entering the processing chamber during the lubricant final rinse phase is automatically injected as per manufacture's dilution rate specifications. (The injection rate is set by a factory trained technician.)

   NOTE: The lubricant bottle(s) need to be monitored daily to assure that the lubricant bottle does not run dry. Change the bottle(s) when the lubricant level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the lubricant lines.

   If air would enter the lubricant line(s), first reattach a new bottle of lubricant then start the machine for your next cycle. While the lubricant pump is trying to fill use the hand pump on the bottle to prime the lines until all tubing is filled with lubricant.

5. Following the lubricant phase will be a fresh water rinse with ultrasonics.

6. The drain phase after the final rinse will contain an air purge of the lumen instruments.

7. At the completion of the program, remove the instruments for further processing and follow the screen prompt to **(F3)** CONTINUE, CLEAR PATIENT DATA and return to the standard operating screen.

(F8) PRE-RINSE/WASH & LUBRICATE:

This program selection pre-rinses, washes, rinses and will air purge your device(s). At the completion of this cycle the instruments are ready to be sterilized using a terminal sterilization process.

After reviewing and completing the "PRE-PROCESSING" Instructions:

1. **Press (F8) Pre-rinse/Wash/Lub.** This program begins immediately.

2. The pre-rinse consists of sprayers that will spray fresh water on the instruments in the basket. Following the pre-rinse will be a wash and rinse phase.

3. As water is entering the processing chamber during the wash phase, **detergent (Tergal 800)** is automatically injected as per manufacture's dilution rate specifications. (This injection rate is set by a ***Custom Ultrasonics, Inc.*** trained technician.)

   NOTE: The detergent bottle(s) need to be monitored daily to assure that the detergent does not run dry. Change the bottle(s) when the detergent level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the detergent lines.

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If air would enter the detergent line(s), first reattach a new bottle of detergent then start the machine for your next cycle. While the detergent pump is trying to fill use the hand pump on the bottle to prime the lines until all tubing is filled with detergent.

4. Confirm the flow of solution through the channel(s). When the ultrasonics initiate with the wash phase:

    a. Turn on the "AIR" switch for 10 seconds, during the first 60 seconds of the cycle.

    b. Observe the air flow through the channel tubing adapters. The detergent will be purged from all adapters if the internal channels are open.

    c. Turn the "AIR" switch off, close the lid and allow the program to continue.

    NOTE: *If you feel a surgical instrument has a blocked channel, remove it from the processing chamber using proper decontamination and handling techniques, and either attempt to open the channel or call the surgical instruments manufacturer for further directions.*

5. As water is entering the processing chamber during the lubricant final rinse phase is automatically injected as per manufacture's dilution rate specifications. (The injection rate is set by a factory trained technician.)

    NOTE: The lubricant bottle(s) need to be monitored daily to assure that the lubricant does not run dry. Change the bottle(s) when the level drops down to within one inch of the bottle's bottom. This is to assure no extra air gets into the lubricant lines.

    If air would enter the lubricant line(s), first reattach a new bottle of lubricant then start the machine for your next cycle. While the lubricant pump is trying to fill use the hand pump on the bottle to prime the lines until all tubing is filled with lubricant.

6. Following the wash phase will be a fresh water rinse with ultrasonics.

7. The drain phase after the final rinse will contain an air purge of the lumen instruments.

8. At the completion of the program, remove the instruments for further processing (sterilization) and follow the screen prompt to **(F3)** CONTINUE, CLEAR PATIENT DATA and return to the standard operating screen.

(F9) EMPTY:

1. Make certain the two main basket adapter hook ups are connected to the machine's bulkhead fittings and are laying in the chamber.

2. Press **(F9)** to **"EMPTY"** the processing chamber.

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3. When cleaning the chamber, engage the rinse switch on the front door panel and remove the rinse hose from its holder. Use a hospital grade, non-abrasive surface cleaner/disinfectant to clean the machine.

4. When the chamber is thoroughly rinsed and emptied, turn the "RINSE" switch "OFF". The rinse light will turn "OFF".

5. Press the handle on the hand spray to relieve the water pressure and return to storage.

6. To end the emptying process, Press **(F1) Stop Maintenance**.

(F10) MAIN (THIS KEY IS ONLY USED ON DUAL CHAMBERED MACHINES):

Pressing **(F10)** will take you to the MAIN PROGRAM screen. To select a different bay, use the left and right arrow keys and illuminate the desired bay in red. Press Enter. (This selection is only available for double bay systems.)

NOTE: Program selection is determined by the operator. Program choice is initiated by pressing the appropriate function key. The screen prompts will assist you in determining the correct program.

IMPORTANT INFORMATION

Once a program is initiated, it cannot be aborted. The program must run to completion.

If a SYSTEM FAULT occurs, a BEEP will sound, the arrow on the dial will move to COMPLETE, and a screen prompt will ALERT you to an ERROR. Directions will appear on the screen to clear the ERROR; before clearing ERROR make note of the problem to help in trouble shooting when talking with qualified technicians.

CAUTION: If an error occurs, the selected process will not have been completed. The operator must determine the steps to follow to complete the selected process after addressing the system ERROR. For Questions Call **Custom Ultrasonics, Inc.** 215-364-1477.

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PROBLEM SOLVING

SYSTEM DIAGNOSTICS:

The SYSTEM DIAGNOSTICS PROGRAM should be performed by trained qualified Biomedical or Maintenance personnel during routine maintenance procedures to be performed quarterly, or as a response to a system FAULT.

1. Return to the MAIN MENU BAR, Press the **ALT** and **C** keys simultaneously. Using the arrow keys, highlight SERVICE and Press **ENTER**.

2. When the service screen appears, using the arrow key, move to the "digital I/O test" and Press **ENTER**.

3. Select the BAY desired by moving the arrow key. The component circle will illuminate indicating the BAY and COMPONENT you have selected

4. After selecting the appropriate component, press the **SPACE BAR** to activate the component. The circle will turn red and the component should function. If the light does not come on, there is a problem with the I/O Board. Contact ***Custom Ultrasonics, Inc.*** at 215-364-1477 for further instructions. If the component functioned properly, then it is functioning properly. Press the SPACE BAR a second time to de-activate the component.

   If the component light comes on but the component does not activate:

   a. check to see that you have 110 volts at the outlet plug and that the circuit breaker on the back of the machine is up;

   b. check if the mechanical component has failed; or

   c. determine whether the interface relay is burned out Contact ***Custom Ultrasonics, Inc.*** 215-364-1477

5. After completion of the SYSTEM DIAGNOSTICS, Press **ENTER** to exit the service program.

6. To return to the main program, move cursor to **EXIT** and press **ENTER**.

7. The MAIN MENU BAR will appear. Press the **ALT** key and **U Key** simultaneously, the computer will return to the standard operating screen.

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SYSTEM FAULT:

System fault may occur during a processing program. If the System should FAULT, the computer will abort the process in progress, and a BEEP will sound. A screen prompt, **(F1)**, will appear on the blue bar followed by the FAULT. The RED arrow on the process dial will move to COMPLETE. To clear the FAULT and stop the beep press **(F1).** (Make sure to note the fault on a note pad before clearing.)

FAULT CODES:

1. **(F1): CLEARS ERROR, CHECK WATER CHANNEL**
   This indicates that the liquid flow to the instrument channels has been interrupted. Contact BIOMEDICAL ENGINEERING to determine function of the oscillating pump and/or flow sensor.

2. **(F1): CLEARS ERROR, SAFETY FLOAT ACTIVATED**
   This indicates that a safety float has been triggered, either in the reservoir or the processing chamber.

   a. Select **(F4)** Special, Press **(F5)** Empty to empty the water out of the processing chamber.

   b. When the processing chamber is empty, press **(F1)** Stop Maintenance. Return to **(F3)** Standard screen and re-start machine after reading the note below.

   NOTE: Check operational float to make sure float is not sticking in the down position. Check water entry into the System to make certain it is not entering at an abnormal rate.

3. **(F1): CLEARS ERROR, INVALID START STATE**
   This error will occur if the operator attempts to initiate a cycle with a full processing chamber or if the safety float is activated. In order to start a cycle, the operator must empty the processing chamber.

   a. Select **(F4)** Special, either **(F5)** Empty the liquid out of the process chamber.

   b. Re-start machine at this point. If problems continue, call ***Custom Ultrasonics, Inc.*** 215-364-1477.

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PROCEDURE TO RECOVER FROM LOSS OF SETUP

A. Use this procedure to check and/or reset COMPUTER BIOS SETUP.

B. This procedure may be necessary if an apparently good bootable disk evokes an error message such as "DRIVE NOT READY ERROR. Insert Boot Diskette in Drive A: - Press any key to continue."

C. The BIOS setup may be lost if the NICAD battery attached to the mother board has lost its charge.

D. Possibly means that the SETUP program was inadvertently accessed and altered.

E. Explain the following to the customer as the customer is performing the functions. It may be a good idea to do the same thing to a computer yourself while prompting the customer.

PROCEDURE:

1. The first screen you will see has a line about ½ way down which reads "Hit ‹ Delete › if you want to run SETUP." Be prepared to hit the ‹ Delete › key as soon as you see the message after reboot.

2. While computer is running, REBOOT by simultaneously hitting ‹ Ctrl › ‹ Alt › ‹ Delete › or press the "Reset" button on the front of the CPU. Note: It is never advisable to turn the computer power off and on to reboot unless absolutely necessary.

3. After the computer reboots, a purple and green screen labeled "SETUP PROGRAM" should be in view.

4. Highlight "Standard CMOS SETUP" using the arrow keys and hit ‹ ENTER ›.

5. Ignore the warning screen and hit ‹ ENTER ›.

6. Use arrow keys to move around ‹ Page Up › and ‹ Page Down › to modify parameters.

   a. Set Date and Time if needed
   b. Hard Disk C: Type Not Installed (If a Hard Drive Database Unit, Contact ***Custom Ultrasonics, Inc.*** at 215-364-1477)
   c. Hard Disk D: Type Not Installed
   d. Floppy Drive A: 1.44 MB, 3½"
   e. Floppy Drive B: Not Installed
   f. At this time ignore all other lines
   g. Hit ‹ Esc › to leave screen

7. Highlight "Advanced CMOS SETUP".

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COMPUTER INSTALLATION INSTRUCTIONS

Installation of replacement computer.

1. Unplug all AC cables from ***System 81 Plus*** and the computer from the wall receptacle.

2. Make note of cable location in the back of computer.

3. The new computer will have cable location stickers on its rear/back.

4. Vibration from shipping can loosen cards that connect to the mother board. Remove computer cover and reset all cards, including ram chips. Check that all cables inside computer are attached. (If cables are not attached, please call 215/364-1477 for instructions.)

5. Remove white plastic security key from the back of the original computer's printer port. This key should be secured to the back of the new computer's printer port.

6. Replace all cables to correct location and secure with screws.

7. Replace program disk from old computer. (Your new computer may come with a new disk. If so, DO NOT replace with old disk.)

8. Reconnect all AC cables and check circuit breakers.

9. Turn ***System 81 Plus*** on. Enter service program and function test all components. When System passes function test, run in normal mode.

10. Ignore the warning screen and hit ‹ Enter ›.

11. Use arrow keys to move around: ‹ Page Up › and ‹ Page Down › to modify
    a. FIND "System Boot Up Sequence"
    b. Verify that it reads "A:,C:"
    c. If NOT arrow down to highlight and modify to A:,C:
    d. Hit ‹ Esc ›

12. Hit the function key ‹ F10 › to "Save and Exit"

13. Warning screen will say "Write to CMOS and Exit (Y/N)?" Hit ‹ Y › then ‹ Enter ›

14. This will continue normal system boot up. If this fails to correct the problem, see George.

If any questions about installation should arise, please feel free to call 215-364-1477. Please return all parts including old program to ***Custom Ultrasonics, Inc.*** for inspection. Thank you for your help in the replacement of this computer.

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CLEANING THE METAL FILTER SCREEN:

On the bottom of the side wall of the processing chamber, below the float enclosure is a small mesh screen. This screen acts as a filter to prevent large debris from circulating through the channels of the device(s) being processed and must be cleaned on a quarterly routing basis.

1. Remove the float cover screen.
2. Unscrew the filter screen.
3. Immerse the screen in detergent solution and brush it to remove entrapped sediment.
4. Rinse the screen under running warm tap water.
5. Screw the filter screen back into place.
6. Replace the metal float cover screen.

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ROUTINE MAINTENANCE PROCEDURE

To maintain your ***System 81 Plus*** in optimal condition, routine maintenance procedures must be performed on a quarterly basis and by a qualified BIOMEDICAL TECHNICIAN or MAINTENANCE TECHNICIAN.

For further information regarding the qualifications for performing the maintenance procedures, or to address questions regarding the procedure, contact ***Custom Ultrasonics, Inc.***, 215-364-1477.

TO BEGIN MAINTENANCE PROCEDURE:

1. Turn the hot and cold water valves OFF at the hospital's wall. Be sure to note the settings of the water valves, and return the valves to the same setting at the completion of the Maintenance Procedure.

2. Enter the service screen (the service screen instructions will be located at the end of the maintenance procedure section) and activate the water inlet solenoid, the drain solenoid and the residual drain solenoid. Activate these solenoids for about 45 seconds to ensure no water will be left in the machine.

3. Turn the computer "OFF" then, move the CIRCUIT BREAKER(S) to the "OFF" position on the back of the ***System 81 Plus.***

4. Disconnect the AC plug(s) from the wall receptacle(s).

5. Move the system away from the wall. Remove the rear panel(s) by removing the screw at the lower center of the white panel(s).

   CAUTION: The door is made of steel, use caution when removing not to get fingers caught under the doors.

6. Inspect interior of the system for visible liquid leaks. If liquid leakage is apparent, locate the source of the leak(s) and repair. Repair any leaks before completing the preventative maintenance as it may leave extra liquid on the shelf.

7. Disconnect the hot and cold water line(s) from the System. Check the filter screens and hoses for wear and rust. Replace as needed. After inspection, reconnect the water lines to the ***System 81 Plus.*** DO NOT TURN ON THE WATER VALVES AT THIS TIME. If the system has water filters replace those filters at this time.

8. Clean each of the solenoid housings below, be certain to clean the diaphragms, plungers and brush the screens. Also examine and clean the solenoid seats and inspect around the base of the seats for any foreign debris. Inspect the springs on the plungers for wear, check the ¾ inch diaphragm springs connecting the plungers to the diaphragms to be sure they are attached firmly
   - Drain Solenoid (if applicable)

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- Water Inlet Solenoid
- Hand Spray Solenoid
- Air Solenoid
- Detergent/Lubricant Solenoids

9. Remove the four (4) wing nuts from the drain pump. Inspect the pump's impellor for foreign objects. Clean and reassemble the pump. Be sure the wing nuts are secure.

10. Check all the compression fittings for the purge pump, air pump, detergent and lubricant pump.

11. Check hand spray tubing, handle and fittings for leakage and wear.

12. Check plumbing unions and ball valve and drain lines for leaks.

13. Check purge pump(s) to the manifold(s). Make sure the silicon tubing on both sides of the purge pump is not coming in contact with any other objects.

14. Check transducers on the bottom of the ultrasonic chamber(s). Check the ground lug on the transducer plate(s) located next to the gray shielded cable to the generator(s). Pull on the blue wires attaching the crystals to each other and make certain that none of the connections are loose. If a loose or broken wire is found re-attach the wire with silver solder.

15. Clean the front and rear louvers of the generator enclosure(s).

16. The interface is a white enclosure mounted under the shelf on the right or left side of the cabinet. Check and secure all four (4) plugs.

17. Check the drain hoses for kinks and wear at the site of the standpipe.

18. Check the movement of the circuit breaker and inspect the hospital grade plug(s).

19. Two floats are located behind the metal cover in the scope processing chamber(s). Check the operation of the float and clean the shafts and the float bobbers.

20. Behind the metal cover, locate and unscrew the filter screen from behind its housing and clean. Replace screen and ensure the screen is fully secured.

21. Reconnect the System(s) AC plug(s) to the wall receptacle(s).

22. Replace any water filters before turning machine back on refer to, TURN WATER BACK ON as per instructions in step number 1.

23. Connect the AC plug(s) from the computer and the System into the wall receptacle(s), and engage the CIRCUIT BREAKERS.

24. Turn the computer "ON".

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25. Enter the service program and function test all the components by turning them on and off.

26. Lubricate the bulkheads by placing a drop of silicon on the end of one of the male bulkheads then insert it into all female bulkheads and twist it around several times.

27. All switches on the front door panel should be in the "DOWN" position.

28. Measure water temperature, it should read around 110 degrees Fahrenheit.

29. Confirm completion of the ROUTINE MAINTENANCE PROCEDURE to the department supervisor and document accordingly. Mail Routine Maintenance cards to ***Custom Ultrasonics, Inc.***

30. Replace the rear panel(s).

31. Position the system into its original location making certain that all hoses are in position and that they do not have any kinks.

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SERVICE PROGRAM INSTRUCTIONS

STEP 1: Entire system is turned "ON" by opening front door of unit and engaging On/Off switch on CPU located in lower right hand corner. Allow the computer to perform the "Boot Up" procedure. When the computer is ready, a gray MASTER MENU screen will appear.

STEP 2: Red highlighted letters on menu are the activation keys. Hold down the (ALT) key and press the (C) Key.

STEP 3: Press the down arrow key and highlight SERVICE, press (ENTER).

STEP 4: A blue selection bar will appear on the bottom.

STEP 5: Use arrow key and highlight DIGITAL I/O. Press Enter. A component screen will appear and the cursor will be located on Ultrasonics **1**. The arrow keys control the curser.

		BAY OUTPUTS 1 2 3 4	BAY INPUTS 1 2 3 4	
Ultrasonics	1	O O O O	O O O O	1 Flow
Drain Pump	2	O O O O	O O O O	2 Float
Drain Sol.	3	O O O O	O O O O	3 Safety
Water in Sol.	4	O O O O	O O O O	4 Lubrication
Oscillating pump	5	O O O O	O O O O	5 Water Channel
Disinfectant Pump	6	O O O O	O O O O	6 Reservoir Pump
Disinfectant Feed sol	7	O O O O		
Disinfectant Return Sol.	8	O O O O		
Residual Pump & Sol.	9	O O O O		
Air Pump & Sol.	10	O O O O		
Lubricant (81); Detergent (83)	11	O O O O		
Reservoir Heating Pad	12	O O O O		
Bay Heating Pad	13	O O O O		
Detergent Pump (81)	14	O O O O		
Enzyme Pump (81)	15	O O O O		

STEP 6: Activate the component, highlight the circle and press the SPACE BAR. To de-activate the component press the SPACE BAR again. Multiple components can be turned on at the same time.

STEP 7: Only outputs can be activated by the cursor and space bar. To end service program, press ENTER. The blue bar will appear. Use arrow keys and highlight EXIT. Press ENTER.

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FOR PARTS AND SCHEMATICS CONTACT CUSTOM ULTRASONICS, INC. @ 215-364-1477/

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